

## CHAPTER 4.0

### POTENTIAL AIR QUALITY IMPACTS FROM INCREASED AVAILABILITY AND UTILIZATION OF PRB COAL

#### 4.1 OVERVIEW

In the EIS, SEA performed a detailed analysis of the potential impacts of the proposed project alternatives based on the anticipated emissions of criteria pollutants from locomotives at three levels of operation: 20, 50, and 100-million tons of coal annually. For this evaluation, SEA used its established methodology. This methodology and its results were upheld by the court in Mid States (see 345 F. 3d. at 540-41)<sup>1</sup> and therefore are no longer at issue here.

However, as discussed previously in Chapter 1, the court in Mid States directed the Board to examine the potential indirect air quality impacts of increased coal consumption that might result from lower transportation rates as a result of this project.<sup>2</sup> The EIS had acknowledged that the Clean Air Act's requirements would encourage many utilities to shift to western, low-sulfur coal that the new line would carry, but had reasoned that such a shift would occur with or without the new line, since two other carriers already transport low-sulfur coal out of Wyoming and DM&E would merely be an additional competitor in a growing market, albeit one that would provide a shorter and straighter route.<sup>3</sup> The court found this reasoning unpersuasive.<sup>4</sup> The court also rejected the argument that the potential air impacts of burning low-sulfur coal were too speculative and far removed from the Board's approval of construction and operation of this rail line for the Board to be required to consider them in its NEPA analysis

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<sup>1</sup> Included at Appendix A. The reader is reminded that all page number references to 345 F. 3d., the 1998 Decision, 2002 Decision, and EIA's Rate Sensitivity Analysis apply to the page numbers of the documents themselves and not the page number of the appendix.

<sup>2</sup> 345 F. 3d. at 548-50.

<sup>3</sup> See Draft EIS, Chapter 2, pages 1-10 to 1-18; Final EIS, Chapter 2, pages 2-6 to 2-15.

<sup>4</sup> 345 F. 3d. at 549.

in this case.<sup>5</sup> The court noted that the EIS scoping notice in this case had stated that the Board would:

*[e]valuate the potential air quality impacts associated with the increased availability and utilization of Powder River Basin coal.*<sup>6</sup>

It also faulted the EIS for failure to address three computer simulation models identified by some commenters (PROSYM, PROMOD, and GE-MAPS) that allegedly could be used to forecast the effects of the DM&E project on the consumption of coal.<sup>7</sup>

Petitions for rehearing of the court's determination on the coal consumption issue were filed by the Board and various other parties. All of the petitions for rehearing were denied without an opinion on January 30, 2004. SEA then began its work on remand on this issue.

In response to the court's decision, SEA has conducted additional analyses on the concerns raised by the court regarding the potential impacts of increased coal consumption that could result from the DM&E project. SEA's analysis has focused on two primary questions:

- (1) How the transportation rates for PRB coal would change with DM&E's entrance into the market place.
- (2) Given the change in transportation rate, what, if any, would be the potential air quality impacts.

Initially, SEA researched what model, if any, could yield information that would be useful in addressing these questions. SEA initially determined that the analysis of these issues would be best with use of a national model that includes forecasts into the future, if such a model was available. A national model was required, SEA believed, because SEA's analysis would

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<sup>5</sup> Id.

<sup>6</sup> Id. at 550.

<sup>7</sup> Id.

have to compare the use of Powder River Basin (PRB) coal to other coal mining regions. Forecasts would be required to determine how the mix of coal sourcing would change over time.

As discussed in more detail below, SEA staff gathered information on several models and researched in detail five models: the three models referenced in the court decision in Mid States (PROSYM, PROMOD, and GE-MAPS); the Environmental Protection Agency's (EPA) Integrated Planning Model (IPM); and the Department of Energy, Energy Information Administration's (EIA) National Energy Modeling System (NEMS). In addition, SEA had discussions with both EPA and EIA, and met informally with EIA to further discuss modeling options.

Based on all the information SEA gathered, SEA determined that it would be appropriate to use EIA's NEMS model for this Draft SEIS, as explained in detail below. This coal supply and demand forecasting model, which also quantifies environmental impacts, appeared to SEA to be designed to address the exact issues that the court requested the Board to assess, if possible, on remand. After EIA concurred that its model would help the Board quantify the effects of the DM&E construction project and agreed to run a sensitivity analysis for SEA using NEMS showing the effects of variations in transportation costs on projected coal use and associated emissions, SEA provided EIA staff with the appropriate set of cases to be run.<sup>8</sup> Then EIA executed the necessary model runs and provided the results of its analysis to SEA in the form of a report that is attached to this Draft SEIS at Appendix G for public review and comment. Any comments on this report will be addressed in the Final SEIS.

The following sections of this chapter discuss all of the steps of SEA's analysis. These sections include:

- review of models - this section provides a discussion of the computer simulation models available to potentially determine if the proposed project would increase PRB coal utilization.

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<sup>8</sup> Appendix F, correspondence with EIA.

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- selection of model for analysis - this section discusses the reasons for SEA's selection of NEMS.
  - determination of model inputs - SEA performed a detailed analysis to determine the appropriate set of cases to be run to best assess the questions to be addressed on remand.
  - modeling results - this section discusses the national and regional results of the computer simulation modeling using SEA's inputs and provides information on the change in coal production, coal consumption, and coal-fired electricity generation, as a result of this project, and the anticipated air quality impacts of these changes.
  - SEA's conclusion that, without knowing the location and extent of any impact on coal consumption, the potential impact on local air emissions cannot be determined, and that, accordingly, SEA followed the procedure set forth by CEQ at 40 CFR 1502.22(b) for addressing impacts where critical information is incomplete or unavailable.

## **4.2 REVIEW OF POTENTIAL COMPUTER SIMULATION MODELS**

In order to begin preparing this portion of the Draft SEIS, SEA investigated what computer simulation models (if any) could potentially yield meaningful results in assessing the concerns raised by the court regarding the potential impacts of increased coal consumption that could result from the DM&E proposal. SEA gathered information on several models and researched in detail five models: the three models referenced in the court's decision (PROSYM, PROMOD, and GE-MAPS); EIA's NEMS model and EPA's IPM model. The information that SEA developed on these models (based on its own independent investigation and informal discussions with both EPA and EIA) is summarized below.

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#### **4.2.1 PROSYM**

PROSYM is an electric utility and regional pool production costing model developed and owned by Henwood Energy Services, Inc. The model was designed primarily to perform detailed hourly chronological simulations of power generation system operations.

Because the model considers only the costs of power generation for operation of existing or known future facilities, it would not provide any information related to potential changes in the kind of fuel that is used at existing facilities or the potential for new generation. Nor would it address what fuel type any new generation would utilize. Thus, SEA determined that PROSYM would not be able to provide meaningful information on the issues remanded by the court: the potential future amount of additional coal that would be consumed due to this project and the associated air quality impacts.

#### **4.2.2 PROMOD**

PROMOD IV is a model developed by NewEnergy Associates, a company under the Siemens Corporation. PROMOD, like PROSYM, is an operations model. PROMOD acts as a transmission and generation planning and economic tool for the electrical utility industry. It appears to allow the user to evaluate and assess issues such as the local and regional power need, supply, and demand, and the capacity of the existing transmission and generation system to meet a specific power demand. Because it is not a forecasting model and does not consider the price and availability of other fuels, it does not appear that the PROMOD IV model would provide meaningful answers to the air quality issues identified by the court for analysis in this Draft SEIS.

#### **4.2.3 GE-MAPS**

The Multi Area Production Simulation (MAPS) program model, another operations model, is offered and supported by GE Energy. Similar to PROMOD IV, this model was developed as an economic planning tool for the utility industry. MAPS integrates information on the generation, transmission, and load of local electrical systems in order to assess electricity production costs. It appears to consider such things as system electricity supply and demand and the implications of system congestions on pricing. It also functions as a planning tool for utilities, assisting in the assessment of how to prevent or avoid system bottlenecks and appropriately schedule down-time for maintenance.

SEA determined that while MAPS could be used to identify the amount of potential new generation that is likely within a particular geographic area, as with PROMOD IV, it appears to have no way to consider some of the issues that are pertinent here, such as forecasting the type of fuel (coal, natural gas, etc.), the likely source of the fuel (western coal, eastern coal, etc.), and the amount of the new generation. Without the ability to provide forecasts of such issues, this model appears to be of little benefit to the analysis needed here.

#### **4.2.4 NEMS**

NEMS, the model developed by the Department of Energy's EIA, is a national coal supply and demand forecasting model, which also quantifies any associated environmental impacts. In contrast to PROSYM, PROMOD, and MAPS, which are designed to simulate existing operations and how to modify those operations scenarios in response to particular operational issues at an electricity generation plant or small group of plants, NEMS is a forecasting and predicting model that provides information on future energy-related issues. NEMS looks at the entire breadth of the national energy market place, simulating energy demand, growth, new generation (by fuel type and amount), and cost (including fuel cost). And the NEMS model contains a Coal Market Module (CMM) that provides forecasts of U.S. coal production, consumption, exports, imports, distribution, and prices. The coal production submodule of the CMM determines supply curves for each of 14 supply regions and 12 coal types. The coal distribution submodule determines the least-cost supplies of coal from the supply regions to 14 demand regions. These coal data reflect the minemouth price of coal plus the transportation costs. Moreover, coal supply and demand is forecasted 20 years into the future, which allows the effects over time to be quantified. NEMS calculates the air emissions associated with projected future electricity generation. Indeed, the data on emissions reflected in NEMS includes criteria pollutants—sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>)—as well as carbon dioxide (CO<sub>2</sub>) and mercury (Hg).<sup>9</sup>

For all these reasons, SEA determined, following consultations with EIA, that the NEMS model would be well suited for the analysis requested by the court. Specifically, SEA concluded

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<sup>9</sup> Some of the commenters on the Draft EIS had asked that the Board disclose information on potential CO<sub>2</sub> and Hg emissions in this case.

that by modifying the existing transportation costs within NEMS (to simulate reduction in transportation costs from the PRB to the marketing regions targeted by DM&E), changes in the demand for coal from different supply regions that could result from this construction project could be compared to the case where there are no modified transportation costs—and the resulting change in emissions could be evaluated. SEA also determined that EIA produces an Annual Energy Outlook report that could be used as a base-line for these comparison purposes.

In researching the potential benefits of NEMS, SEA also took into account the fact that NEMS is the model used by the government for energy use prediction, and that the coal forecasts in NEMS have been used in rate reasonableness cases before the Board by a variety of parties and for a number of special analyses at the request of the White House, U.S. Congress, and other government agencies.

Finally, SEA determined that use of the NEMS model would be cost effective, since EIA agreed to run the model for the Board at no cost in this case. Another cost savings is that no additional runs would be required to create the base-line case since EIA's most recent Annual Energy Outlook (2005) report would already fulfill this need.

#### **4.2.5 IPM**

IPM could also provide meaningful information in this case. IPM, a national forecasting model like NEMS, was developed by EPA, in association with ICF Consulting, for the purpose of assessing the potential impacts of air pollution control regulations on the more than 800 electricity generating stations in the United States over the next 15-20 years or more. Although designed to evaluate air quality impacts, the IPM model includes consideration of such parameters as fuel sources, availability, and cost as part of the determinations about new generation facilities. However, IPM relies on NEMS data for coal supply and demand forecasts. And use of the IPM model—which unlike NEMS is administered and managed by a private consulting firm—would have been costly.

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### 4.3 SEA'S SELECTION OF AN ANALYSIS MODEL

As previously noted, SEA concluded that a future prediction or forecasting model would be appropriate to perform the analysis requested by the court in Mid States, not an operations model. However, the models suggested by the court and the parties in this case—PROSYM, PROMOD and GE-MAPS—are operations models. They are more plant-specific than NEMS or IPM and appear to be designed to evaluate coal usage given a specific demand within a plant or among a few plants based on local decisions. They do not consider the price and availability of other fuels and are unable to consider inter-regional effects of changes in transportation costs on a national basis. The court in Mid States indicated that the increased availability of inexpensive coal, as a result of this project, would at the very least make coal a more attractive option to future entrants into the utilities market when compared with other potential fuel sources, such as nuclear power, solar power, or natural gas,<sup>10</sup> and directed the Board, on remand, to examine “the effects that may occur as a result of the reasonably foreseeable increase in coal consumption.”<sup>11</sup> None of the operations models that have been considered are designed to analyze that question. Therefore, SEA determined that use of these models would not be a good fit for this case.<sup>12</sup>

SEA decided that the NEMS model would be particularly well suited to help the Board fulfill the court’s remand. First, NEMS is the model used by the government for energy use prediction. SEA relied extensively on EIA’s Annual Energy Outlook when preparing the EIS, as it provides the most comprehensive and objective assessment of the energy industry available.<sup>13</sup>

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<sup>10</sup> 345 F.3d at 549.

<sup>11</sup> Id. at 550.

<sup>12</sup> Environmental comments in another pending coal construction case—the Tongue River case (Docket No. FD 30186 Sub. No. 3, Tongue River Railroad Company, Inc.—Construction and Operation—Western Alignment—submitted after SEA had selected the NEMS model further supports SEA’s model selection in this case. In Tongue River, Minnesotans for an Energy-Efficient Economy and Minnesota Center for Environmental Advocacy filed comments on a Draft EIS suggesting that the Board use the NEMS model (or IPM) to forecast the location and amount of the increased emissions in that case. Minnesotans for an Energy-Efficient Economy is the same party that had suggested using the operations models discussed above in its comments on the Draft EIS in this case. Therefore, SEA’s independent conclusion that NEMS is a better fit for this application than PROSYM, PROMOD, or GE-MAPS is implicitly supported by the party that suggested modeling in the first place.

<sup>13</sup> SEA received no comments on its use of EIA’s Annual Energy Outlook for the EIS.

Moreover, the Board has accepted coal forecasts that feed into NEMS in rate reasonableness cases before the Board. The use of NEMS here would be consistent with this precedent.<sup>14</sup> The NEMS model also has been used for a number of special analyses at the request of the White House, the U.S. Congress, and other agencies, thus lending credibility to the NEMS model.

Second, while IPM likely could provide meaningful information on the remanded issues, SEA ultimately determined that, because IPM itself relies on NEMS's energy-related data, it would be preferable to use NEMS here, particularly as some additional NEMS modeling could be necessary to determine the inputs for IPM if a sensitivity analysis using IPM were performed in this case. Overall, the NEMS model is for energy prediction, including coal demand and use, making it the most appropriate choice to answer the question about coal consumption that was remanded by the court. While NEMS, like IPM, also has the ability to predict future air emissions, IPM is more a tool to evaluate air emissions impacts, both to air quality and the dynamics of energy generation.

Finally, NEMS, unlike all the other noted models, which are controlled by private companies, is managed and controlled exclusively by another Federal agency, EIA. And as a Federal agency, EIA agreed to conduct modeling for SEA in this case without cost to SEA, making the model cost effective here.<sup>15</sup>

#### **4.4 SEA'S DEVELOPMENT OF TRANSPORTATION RATE SENSITIVITY ANALYSIS SCENARIOS FOR USE BY EIA**

After discussing the capabilities of the NEMS model, SEA and EIA agreed that transportation rate sensitivity analyses could be performed to project how the forecasted demand for PRB coal might be affected by changes in the rail transportation rates, and to assess the likely impact, if any, on air emissions from any projected increase in consumption of PRB coal. SEA

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<sup>14</sup> SEA notes that in the 1998 Decision, the Board had rejected the use of EIA's coal forecasts because it considered DM&E's plant-by-plant analysis to be preferable in addressing the transportation-related issues involved in this case. In contrast, national and regional forecast data such as that provided by NEMS is best suited to address the question raised by the court in Mid States.

<sup>15</sup> The IPM model, as noted, is administered and managed for EPA by ICF Consulting, a private, non-government consulting firm. Use of this model would likely cost into the tens of thousands of dollars to set-up and conduct the necessary modeling.

selected the range of potential rate changes to be examined in the rate sensitivity analysis based on the Board's assessment of the mileage savings of DM&E's route and DM&E's expected market shares in the 1998 Decision, which preliminarily approved the construction of DM&E's proposed line based on a record that was complete except for the environmental analysis. In that decision, the Board found that DM&E would be a financially viable competitor for the transportation of coal from the PRB to electric power plants in the marketing regions targeted by DM&E (particularly the Midwest) because DM&E would have a shorter, straighter route to its core markets<sup>16</sup> than the routes of the two carriers already serving the PRB—BNSF Railway Company (BNSF) and Union Pacific Railroad Company (UP).<sup>17</sup>

#### **4.4.1 SEA's Projections of DM&E's Likely Transportation Rates**

The NEMS model includes inter-regional transportation costs that are designed to reflect supply and demand in U.S. energy markets.<sup>18</sup> The coal transportation costs in NEMS are based on actual transportation rate information between specific mines and specific plants that is collected by the Federal Energy Regulatory Commission (FERC) and EIA. This actual data is then aggregated to determine an average transportation rate between the various supply and demand regions within NEMS. NEMS is a modular system where the different modules interact to determine the economic supply and demand balance for each fuel used to generate electricity. The Coal Market Module (CMM) provides forecasts of U.S. coal production, consumption, exports, imports, distribution, and prices.<sup>19</sup>

SEA asked EIA to adjust the average transportation costs in the CMM to reflect SEA's estimate of the entrance of DM&E into the PRB. Because there is no available information on

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<sup>16</sup> DM&E's core markets—the Great Lakes, Upper Midwest, Upper Mississippi River, Chicago Gateway/Illinois River and Ohio River markets—are described in more detail later in this chapter and at pages 23-24 and footnote 44 of the 1998 Decision, which is attached at Appendix B.

<sup>17</sup> In the court case, petitioners had argued that the Board should have updated all of the traffic and profitability projections relied upon in the 1998 Decision before giving final approval for DM&E to construct and operate the new line in the 2002 Decision. The court specifically rejected the argument that the Board should have updated the 1998 data. See 345 F.3d at 550–552. Therefore, SEA has relied on the data in the 1998 Decision in preparing this Draft SEIS.

<sup>18</sup> The coal transportation *rates* charged by rail carriers become transportation *costs* within NEMS for transporting coal from one region to another.

<sup>19</sup> Further information on the NEMS model is available on the EIA website at <http://www.eia.doe.gov>.

the specific rates that DM&E might ultimately decide to charge, SEA assumed that the transportation rate savings for shippers using DM&E's route would be proportional to the mileage savings of DM&E's route over the routes of UP and BNSF, the two carriers that now serve the PRB. Those transportation rate savings are expressed as a percentage reduction to the inter-regional transportation costs contained the NEMS model.

To determine the range of adjustments to apply, SEA undertook a three-step process, with each step based on information in the Board's 1998 Decision. SEA first determined the average mileage savings that would result from the operation of DM&E's coal trains to the plants in DM&E's core markets. SEA then determined how the average mileage savings to the plants would translate to savings to each of the DM&E core markets, based on DM&E's expected market shares. Finally, SEA assigned the DM&E core market savings to the corresponding NEMS inter-regional transportation costs. Each of these steps is described more fully below.

#### Step One: Determine Average Mileage Savings to Plants in DM&E's Core Markets

In the 1998 Decision, the Board found that, based on their costs, the lowest feasible rate that UP and BNSF might charge for transporting PRB coal would be 8.25 mills per ton-mile<sup>20</sup> in 2002 (the base year for the Board's analysis).<sup>21</sup> For purposes of analyzing DM&E's financial viability, the Board assumed that DM&E would receive revenue that was proportional to the mileage savings that DM&E would have over its competitors. The Board found that DM&E's "netback"<sup>22</sup> would be 8.76 mills per ton-mile in 2002. The Board's calculations were based on an average length of haul of 810 miles for DM&E's expected PRB coal movements.<sup>23</sup>

SEA worked backwards from those calculations to determine DM&E's mileage savings over UP and BNSF. Multiplying the average mills figure used in the 1998 Decision for DM&E

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<sup>20</sup> One mill is equal to 1/10<sup>th</sup> of a cent, or \$0.001. A ton-mile is one ton of traffic transported for a distance of one mile.

<sup>21</sup> 1998 Decision, at 38.

<sup>22</sup> The concept of netbacks is discussed in detail in the 1998 Decision at 36-38 and footnote 89.

<sup>23</sup> Id. at 42, Table II.

for 2002 (\$0.00876) and DM&E's averages miles figure (810) produces an average rail rate of \$7.10 per ton-mile. Dividing that average rail rate of \$7.10 per ton-mile by the incumbents' average miles (\$0.00825) yields the incumbent carriers' average length of haul for PRB coal to the same markets: 860 miles, or 50 miles more than DM&E's average miles. This represents a 5.8 percent mileage savings on average over the incumbents to the plants DM&E expects to serve.

#### Step Two: Calculate Mileage Savings to DM&E's Core Markets

In the 1998 Decision, the Board found that DM&E would only be able to capture a certain percentage of the PRB coal traffic in each of DM&E's core markets. The Board did not expect that DM&E would serve every plant within its core markets. Rather, the Board expected that DM&E's market shares in each of its core markets would vary, depending on whether and to what extent DM&E would have a mileage advantage over the incumbent carriers in that market. In the Great Lakes and Upper Midwest Rail markets, for example, the Board expected that DM&E would capture a 62 percent and 61 percent market share, respectively, because of its substantial mileage advantages in those areas. In the Upper Mississippi River market, where the mileage savings would be more modest, the Board expected DM&E to capture a 42 percent market share. And in DM&E's other core markets—the Chicago Gateway/Illinois River and Ohio River markets—the Board found that DM&E would not have a significant mileage advantage and thus would compete with UP and BNSF on a more equal footing, attracting only a 33 percent market share.<sup>24</sup>

However, the particular individual plants that ultimately might use DM&E's service cannot be determined in advance. And a utility company's decision to switch rail carriers may be influenced by other factors beyond the mileage savings to a particular plant. Therefore, to calculate the overall mileage savings in each of DM&E's core markets, SEA multiplied the market share percentage for that market by the 5.8 percent average mileage savings. The resulting mileage savings by market are summarized in Table 4-1 below.

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<sup>24</sup> Id. at 26-36.

<p><b>Table 4-1</b></p> <p><b>Average Mileage Savings by Core Markets</b></p>			
<b>DM&amp;E Market Area</b>	<b>Projected Market Share (percent)</b>	<b>DM&amp;E Average Mileage Savings (percent)</b>	<b>DM&amp;E Mileage Savings by Market (percent)</b>
Great Lakes	62	5.8	3.6
Upper Midwest Rail	61	5.8	3.6
Upper Mississippi River	42	5.8	2.4
Ohio River	33	5.8	1.9
Chicago Gateway/Illinois River	33	5.8	1.9

Step Three: Incorporate Mileage Savings by DM&E Markets Into Corresponding NEMS Regions

SEA determined that the following two coal supply regions used in the NEMS model corresponded to Wyoming's PRB, where DM&E would originate its coal traffic:<sup>25</sup>

- C Supply Region 9 – Northern Powder River Basin
- C Supply Region 10 – Southern Powder River Basin.

Therefore, the NEMS transportation costs that SEA asked EIA to modify for the rate sensitivity analyses were those originating in either of these two NEMS coal supply regions.

SEA also determined that the core markets where DM&E would terminate coal traffic are encompassed in the following four coal demand regions used in the NEMS model:<sup>26</sup>

- C Demand Region 5 – OH (which includes the state of Ohio);
- C Demand Region 6 – EN (which includes the states of Indiana, Illinois, Michigan and Wisconsin);

<sup>25</sup> See EIA Report, Figure 1, at 2 for a diagram of the CMM coal supply regions.

<sup>26</sup> See id., Figure 2, at 3 for a diagram of the CMM coal demand regions.

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- C Demand Region 7 – KT (which includes the states of Kentucky and Tennessee); and
  - C Demand Region 9 – CW (which includes the states of Minnesota, Iowa, North Dakota, South Dakota, Nebraska, Missouri and Kansas)

More specifically, based on the descriptions of DM&E's core markets contained in the Board's 1998 Decision,<sup>27</sup> and EIA's NEMS model documentation, SEA matched up markets and regions as follows:

- C *Great Lakes*: This DM&E core market consists of power plants served by vessel with rail services to Great Lakes transloading facilities via other railroads. This includes power plants located in the states of Wisconsin, Michigan and Ohio. These states correspond to the OH and EN demand regions of NEMS.
- C *Upper Midwest Rail*: This DM&E core market consists of rail-served power plants primarily in Wisconsin and Minnesota. These states correspond to the EN and CW demand regions of NEMS.
- C *Upper Mississippi River*: This DM&E core market consists of power plants served by barge on the Mississippi River. This includes power plants located in Iowa and Wisconsin. These states correspond to the EN and CW demand regions of NEMS.
- C *Chicago Gateway*: This DM&E core market consists of power plants served by rail in the Chicago/Gary area, and via connections at Chicago. The Chicago Gateway market includes the Illinois River market. This includes power plants located in Illinois, Indiana, and Michigan. These states correspond to the EN demand region of NEMS.
- C *Ohio River*: This DM&E core market consists of power plants served by barge on the Ohio River system with rail service to river docks via other connecting rail carriers. This includes power plants in Indiana, Kentucky, and Ohio. These states correspond to the OH, EN and KT demand regions of NEMS.

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<sup>27</sup> 1998 Decision, at 23, footnote 44.

Because all but one of DM&E's core markets matched up to more than one NEMS coal demand region and those DM&E core markets reflected different mileage savings, SEA next assessed which DM&E core market mileage savings to use for each NEMS coal demand region. For example, the CW coal demand region in NEMS includes plants in both DM&E's Upper Midwest Rail core market (with a 3.6 percent mileage savings) and DM&E's Upper Mississippi River core market (with a 2.4 percent overall mileage savings).<sup>28</sup> For any NEMS coal demand region that included more than one DM&E core market, SEA used the *largest* overall mileage savings, as summarized in Table 4-2.

<b>Table 4-2</b>					
<b>Mileage Savings By NEMS Coal Demand Region</b>					
<b>DM&amp;E Market Area</b>	<b>DM&amp;E Core Market Overall Mileage Savings (percent)</b>	<b>NEMS Coal Demand Region</b>			
		<b>OH</b>	<b>EN</b>	<b>KT</b>	<b>CW</b>
Great Lakes	3.6	3.6	3.6	-	-
Upper Midwest	3.6	-	3.6	-	3.6
Upper Mississippi River	2.4	-	2.4	-	2.4
Chicago Gateway	1.9	-	1.9	-	-
Ohio River	1.9	1.9	1.9	1.9	-
<b>Maximum Rail Rate Savings</b>		<b>3.6</b>	<b>3.6</b>	<b>1.9</b>	<b>3.6</b>

Therefore, for movements originating in either of the two NEMS coal supply regions that represent the PRB, SEA expected that, based on the analysis in the Board's 1998 Decision, DM&E would have a 3.6 percent overall mileage savings to the OH, EN and CW NEMS coal demand regions and a 1.9 percent overall mileage savings to the KT NEMS coal demand region.<sup>29</sup> These figures formed the basis for the range of rate changes provided by SEA to EIA to be used in the rate sensitivity analysis.

<sup>28</sup> See Table 4-1, above, for the overall mileage savings for each DM&E core market.

<sup>29</sup> Based on these mileage savings, SEA expected that eight inter-regional transportation rates within NEMS (between its supply and demand regions) would be affected by the DM&E project.

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#### 4.4.2 The Expected Rate Reductions Are Likely Overstated

The use of DM&E's average mileage savings understates the mileage savings to plants that are closer to the PRB and overstates the mileage savings to plants that are further from the PRB. For plants closer to the PRB, the mileage savings from using DM&E would make up a larger percentage of the overall move—suggesting that those mileage savings would be higher. This potentially affects the CW coal demand region of NEMS in particular (which includes Minnesota, Iowa, North Dakota, South Dakota, Nebraska, Missouri and Kansas) because it is the western-most NEMS coal demand region, and is the closest NEMS demand region to the Wyoming PRB coal fields. However, the CW demand region also has the highest likelihood of including plants that DM&E does not expect to serve. That is because in the 1998 Decision DM&E's Upper Midwest Rail and Upper Mississippi markets—which matched up to the CW demand region—do not include any plants in North Dakota, South Dakota, Nebraska, Missouri or Kansas, all of which are included in the CW demand region. Therefore, any understatement of mileage savings resulting from using an *average* mileage savings to this NEMS demand region should be offset by that region having the greatest incidence of plants that DM&E could not serve.

There are various other reasons why the approach used here likely overstates the expected reduction in transportation rates that would result from DM&E's entrance into the PRB, leading to an overstatement of the expected increase in demand for PRB coal. First, as noted above, SEA selected the largest overall mileage savings of all DM&E core markets that matched up to any NEMS demand region when determining the mileage savings for the relevant NEMS demand regions.<sup>30</sup> This would overstate the mileage savings to the plants in the other DM&E core markets with lower mileage savings.

Second, the approach used here assumes that *all* plants in the NEMS coal demand regions would receive the specified transportation rate savings. This overstates the transportation rate savings to any NEMS coal demand region that includes areas that DM&E does not expect to serve.

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<sup>30</sup> See EIA Report, Figure 2.

Third, the NEMS model cannot simulate the Board's determination in its 1998 Decision that DM&E's entry into the PRB coal market would be gradual. The 1998 Decision anticipated that once DM&E begins operations, it would take DM&E six years to reach its full market penetration.<sup>31</sup> For purposes of conducting the rate sensitivity analyses, the NEMS model assumes that DM&E would be fully operational in the first year of the NEMS forecast horizon. This would tend to overstate the transportation cost savings in the initial years, thereby overstating PRB coal consumption and the potential impact on air emissions.

Lastly, the NEMS model assumes a continuation of the historical downward trend of coal transportation costs over the NEMS forecast period (through 2025). That historical trend is based on increases in productivity, including additional rail capacity to meet demand for PRB coal. Therefore, the addition of the DM&E route may be *implicitly* included in the downward transportation rate trend already reflected in NEMS. To the extent that it is, the analysis performed for SEA by EIA would reflect a double-count of the drop in transportation rates, thus overstating the potential impact of the DM&E project on PRB coal consumption and resulting air emissions.

#### **4.4.3 The Four Scenarios Used For The Rate Sensitivity Analysis**

To determine whether a rate reduction directly proportional to the mileage savings anticipated in the Board's 1998 Decision would significantly affect consumption of PRB coal and resulting air emissions, SEA asked EIA to conduct a transportation rate sensitivity analysis using the NEMS model. For that analysis, SEA asked EIA to assume four different scenarios: (1) a reduction in transportation rates equivalent to the mileage reductions shown in Table 4-2 above (the most likely scenario based on the 1998 Decision); (2) a reduction *twice* that size; (3) an *increase* in transportation rates comparable in size to the *decrease* in the first scenario; and (4) an increase comparable in size to the decrease in the second scenario. By examining various alternative scenarios, SEA would be better able to assess the extent to which consumption of PRB coal and resulting air emissions might be influenced by differences in transportation rates.

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<sup>31</sup> 1998 Decision, at 41–42.

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More specifically, SEA asked EIA to run the NEMS model using the following four alternative scenarios:<sup>32</sup>

- Scenario 1: 3.6 percent reduction in transportation costs from supply regions NW and SW to demand regions OH, EN and CW; 1.9 percent reduction from supply regions NW and SW to demand region KY.
- Scenario 2: 7.2 percent reduction in transportation costs from supply regions NW and SW to demand regions OH, EN and CW; 3.8 percent reduction from supply regions NW and SW to demand region KY.
- Scenario 3: 3.6 percent increase from supply regions NW and SW to demand regions OH, EN and CW; 1.9 percent increase from supply regions NW and SW to demand region KY.
- Scenario 4: 7.2 percent increase from supply regions NW and SW to demand regions OH, EN and CW; 3.8 percent increase from supply regions NW and SW to demand region KY.

In its report of the results of the rate sensitivity analyses, attached at Appendix G, EIA referred to these as the “Low4pct” scenario, “Low7pct” scenario, “High4pct” scenario, and “High7pct” scenario, respectively.

SEA asked EIA to focus its analysis on the years 2010, 2015 and 2025, to correspond to the study periods in the Board’s 2002 Decision<sup>33</sup> and EIA’s current forecasts (which include information through 2025).

Finally, SEA requested that EIA report the results of the air emissions part of its study with respect to the criteria pollutants (sulfur dioxide, nitrogen oxides, carbon monoxide, and

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<sup>32</sup> Appendix F, SEA’s correspondence with EIA.

<sup>33</sup> The Board did not reassess DM&E’s financial viability in the 2002 Decision. However, to account for the time that had elapsed since the 1998 Decision, the Board developed a Revised Table that shifted DM&E’s original coal tonnage forecasts forward by three years.

particulates), and also with respect to carbon dioxide and mercury, as the NEMS model projects those emissions.<sup>34</sup> There were no standards for either carbon dioxide or mercury at the time EIA ran the sensitivity analyses in this case. As discussed in more detail below, however, on March 15, 2005, EPA issued final rules to regulate mercury emissions at power plants; those rules will apply to the utilities in DM&E's core markets.

#### **4.5 THE RESULTS OF EIA'S COAL TRANSPORTATION RATE SENSITIVITY ANALYSIS**

EIA ran its NEMS model using each of the four transportation rate scenarios provided by SEA. (All other assumptions were the same as those in EIA's Annual Energy Outlook 2005, referred to below as AEO 2005.) EIA then compared the results of these sensitivity runs to the results of its AEO 2005, which EIA used as its "reference" or "base-line" case, and prepared a report (attached as Appendix G) outlining the regional and national changes in coal production, consumption, coal-fired electricity generation and emissions projected for the electric power sector for the four rail transportation rate scenarios SEA had requested. Comparisons were provided for the years 2010, 2015, and 2025.

The analyses showed that, on a national level, there would be very little change in total coal production, coal consumption, coal-fired electricity generation and electric power sector emissions from any of the rate scenarios examined.<sup>35</sup> The study did show small changes in regional projections of coal production,<sup>36</sup> but the aggregate amount of coal used and the emissions associated with its use in each consuming region would be nearly unchanged from the AEO 2005 levels.<sup>37</sup>

EIA presented the results of the analysis by region for the NEMS Electricity Market Module (EMM) regions that align most closely with the relevant NEMS coal demand regions,

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<sup>34</sup> NEMS does not project carbon monoxide and particulates. Therefore, SEA calculated those emissions separately using NEMS data.

<sup>35</sup> Letter from Guy F. Caruso, Administrator, EIA, transmitting EIA Report.

<sup>36</sup> Id.

<sup>37</sup> Id.

which are part of the NEMS Coal Market Module (CMM). The EMM regions studied are the East Central Area Reliability Coordination Agreement (ECAR) region, the Mid-America Interconnected Network (MAIN) region, the Mid-Continent Area Power Pool (MAPP) region, and the Southeastern Electric Reliability Council (SERC) region. EIA also included in its report a review of regional patterns of projected mercury emissions that would apply to the Mid-Atlantic Area Council (MAAC) region.<sup>38</sup> The EMM regions and the areas that make up those regions are defined as follows:<sup>39</sup>

- C EMM Region 1 – ECAR (Michigan, Indiana, Ohio, Kentucky, part of Pennsylvania, West Virginia and part of Virginia);
- C EMM Region 4 – MAIN (Illinois, part of Wisconsin, part of Minnesota, part of Iowa and part of Missouri);
- C EMM Region 5 – MAPP (North Dakota, most of South Dakota, part of Montana, most of Minnesota, Nebraska, and part of Iowa);
- C EMM Region 9 – SERC (Missouri, most of Arkansas, Tennessee, part of Virginia, North Carolina, South Carolina, part of Louisiana, Mississippi, Alabama, Georgia and part of Florida); and
- C EMM Region 3 – MAAC (most of Pennsylvania, New Jersey, Delaware and Maryland)

EIA's assignment of CMM regions (coal demand regions) to the EMM regions are summarized in Table 4-3 below.<sup>40</sup>

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<sup>38</sup> See EIA Report, Table 2, at 4.

<sup>39</sup> See id. Figure 3, at 5 for a diagram of the EMM regions.

<sup>40</sup> See id., Table 2, at 4.

<p><b>Table 4-3</b></p> <p><b>EIA Assignment of EMM Regions to CMM Regions</b></p>		
<b>CMM Regions</b>	<b>CMM Region States</b>	<b>EMM Regions</b>
Region 5 - OH	Ohio	ECAR
Region 6 - EN	Illinois, Indiana, Michigan, and Wisconsin	ECAR, MAIN, and MAPP
Region 7 - KT	Kentucky and Tennessee	ECAR and SERC
Region 9 - CW	Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota	MAPP, MAIN, NWP (part of SD only), SPP (KS only) and SERC (part of MO)

#### 4.5.1 Impact on Coal Production and Consumption

The study showed that the main impact of reducing the transportation costs of PRB coals would be to slightly change the mix of coals used, but that there would be little change in the overall consumption of coal or other fuels.<sup>41</sup>

Table 4-4 compares EIA's regional and national coal production forecasts for the AEO 2005 reference case and the Low4pct scenario—the most likely scenario to be expected from DM&E's entry into the PRB coal transportation business.<sup>42</sup>

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<sup>41</sup> Id., at 4-5.

<sup>42</sup> Values taken from EIA Report, Tables 3, 4 and 5 on pages 9 to 14.

<b>Table 4-4</b> <b>Coal Production (Million Short Tons)</b> <b>Comparing the AEO 2005 and the Low4pct Scenario</b>									
Coal Region	AEO 2005			Low4pct			Percent Change from AEO 2005		
	2010	2015	2025	2010	2015	2025	2010	2015	2025
Appalachia	403	385	406	404	382	402	0.2	-0.8	-1.0
Interior	159	157	182	158	154	182	-0.6	-1.9	0.0
PRB	497	538	633	499	550	639	0.4	2.2	0.9
Other Western	179	189	267	177	188	269	-1.1	-0.5	0.7
<b>National Total</b>	<b>1,238</b>	<b>1,270</b>	<b>1,488</b>	<b>1,239</b>	<b>1,273</b>	<b>1,492</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>

While the study shows some regional changes between the Low4pct and AEO 2005 reference case (ranging from a high of a 2.2 percent increase in PRB coal production in 2015 to a low of a 1.9 percent decrease in Interior coal production in 2015), the change in national coal production is less than 1 percent in each year of the study period. Thus, while there would be a change in the source of coal produced, there would be virtually no change in the total amount of coal produced.

Table 4-5 below compares EIA's coal production forecasts for all four transportation rate sensitivity analysis scenarios on a national basis to the AEO 2005 reference case.<sup>43</sup>

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<sup>43</sup> Id.

<b>Table 4-5</b>						
<b>Coal Production (Million Short Tons) - National Total</b>						
				<b>Percent Change from AEO 2005</b>		
<b>Rate Scenario</b>	<b>2010</b>	<b>2015</b>	<b>2025</b>	<b>2010</b>	<b>2015</b>	<b>2025</b>
Low7pct	1,241	1,275	1,494	0.2	0.4	0.4
Low4pct	1,239	1,273	1,492	0.1	0.2	0.3
AEO2005	1,238	1,270	1,488	-	-	-
High4pct	1,237	1,270	1,487	-0.1	0.0	-0.1
High7pct	1,235	1,270	1,484	-0.2	0.0	-0.3

As Table 4-5 shows, even the Low7pct scenario, representing *twice* the transportation cost savings anticipated by the Board, would result in less than a 1 percent change in coal production on a national basis.

The small changes expected in coal production would be mirrored by comparable small changes in expected coal consumption, as shown in Table 4-6.<sup>44</sup>

<b>Table 4-6</b>						
<b>Coal Consumption (Million Short Tons) – National Totals</b>						
				<b>Percent Change from AEO 2005</b>		
<b>Rate Scenario</b>	<b>2010</b>	<b>2015</b>	<b>2025</b>	<b>2010</b>	<b>2015</b>	<b>2025</b>
Low7pct	1,141	1,190	1,430	0.2	0.4	0.4
Low4pct	1,139	1,188	1,428	0.0	0.3	0.2
AEO2005	1,139	1,185	1,425	-	-	-
High4pct	1,138	1,185	1,423	-0.1	0.0	-0.1
High7pct	1,135	1,185	1,420	-0.4	0.0	-0.4

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<sup>44</sup> Id.

EIA presented the effects of coal consumption on a national basis, which showed that there would be little change in total coal consumption. Even the Low7pct scenario, representing twice the rate savings anticipated by the Board, showed only minimal additional tonnage in coal consumption as compared to the AEO 2005 reference case.<sup>45</sup>

In short, the study demonstrates that the expected changes in transportation rates from the construction of the proposed DM&E line would only minimally affect national coal production and consumption, compared to the AEO 2005 reference case.

#### 4.5.2 Impact on Coal-Fired Electricity Generation

Electricity generation by coal would be almost unchanged under all four transportation rate scenarios. Table 4-7 compares EIA's regional and national coal-fired generation forecasts for the AEO 2005 reference case and the most likely, Low4pct scenario.<sup>46</sup>

<b>Table 4-7</b> <b>Generation from Coal (Billion Kilowatt-Hours)</b> <b>Comparing the AEO 2005 and the Low4pct Scenario</b>									
EMM Region	AEO 2005			Low4pct			Percent Change from AEO 2005		
	2010	2015	2025	2010	2015	2025	2010	2015	2025
ECAR	572	587	595	573	587	595	0.2	0.0	0.0
MAIN	201	207	209	201	207	209	0.0	0.0	0.0
MAPP	142	149	164	142	150	165	0.0	0.7	0.6
SERC	501	509	680	501	509	682	0.0	0.0	0.3
MAAC	141	144	180	141	144	177	0.0	0.0	-1.7
5 Region Total	1,557	1,596	1,828	1,558	1,597	1,828	0.1	0.1	0.0
<b>National Total</b>	<b>2,203</b>	<b>2,285</b>	<b>2,869</b>	<b>2,204</b>	<b>2,285</b>	<b>2,876</b>	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>

<sup>45</sup> See EIA Report, Table 3, at 9.

<sup>46</sup> Values taken from EIA Report, Tables 3, 4, and 5 on pages 9 to 14.

While there would be some small regional changes under the Low4pct scenario, those changes would range from only a 0.7 percent increase in MAPP coal-fired generation in 2015 to a 1.7 percent decrease in MAAC coal-fired generation in 2025. Moreover, the change in national coal-fired generation would be unchanged in 2010 and 2015, and would increase less than 1 percent (0.2 percent) in 2025.

On a national basis Table 4-8 below compares EIA's coal generation forecasts for all of the transportation rate scenarios studied to the AEO 2005 reference case.<sup>47</sup>

<b>Table 4-8</b>						
<b>Generation from Coal (Billion Kilowatt-Hours) – National Totals</b>						
				<b>Percent Change from AEO 2005</b>		
<b>Rate Scenario</b>	<b>2010</b>	<b>2015</b>	<b>2025</b>	<b>2010</b>	<b>2015</b>	<b>2025</b>
Low7pct	2,204	2,287	2,871	0.0	0.1	0.1
Low4pct	2,204	2,285	2,876	0.0	0.0	0.2
AEO2005	2,203	2,285	2,869	-	-	-
High4pct	2,203	2,285	2,870	0.0	0.0	0.0
High7pct	2,202	2,285	2,867	0.0	0.0	-0.1

The small changes in coal production and consumption would translate to virtually no change in the amount of electricity generated by coal-fired utilities across the entire forecast period.

A subset of total coal-fired generation is the amount of coal-fired generating capacity additions. Table 4-9 compares EIA's regional and national coal-fired capacity additions forecast for the AEO 2005 reference case and the Low4pct scenario.<sup>48</sup>

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<sup>47</sup> Id.

<sup>48</sup> Id.

<b>Table 4-9</b> <b>Coal-fired Generating Capacity Additions (Gigawatts)</b> <b>Comparing the AEO 2005 and the Low4pct Scenario</b>									
EMM Region	AEO 2005			Low4pct			Percent Change from AEO 2005		
	2010	2015	2025	2010	2015	2025	2010	2015	2025
ECAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAIN	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
MAPP	0.8	1.7	3.7	0.8	1.8	3.8	0.0	5.9	2.7
SERC	0.0	0.1	23.8	0.0	0.1	23.9	0.0	0.0	0.4
MAAC	0.5	0.5	5.5	0.5	0.5	5.2	0.0	0.0	-5.5
5 Region Total	1.4	2.4	33.1	1.4	2.5	33.0	0.0	4.2	-0.3
<b>National Total</b>	<b>1.8</b>	<b>8.3</b>	<b>86.9</b>	<b>1.8</b>	<b>8.3</b>	<b>87.6</b>	<b>0.0</b>	<b>0.0</b>	<b>0.8</b>

The study shows that the MAPP region, which is closest to the PRB, would realize a modest increase in capacity additions from lower transportation rates out of the PRB. However, on a national basis, there would be little, if any, overall additions. This suggests that utilities would be inclined to locate new plants closer to the PRB because of the lower transportation rates, but that this would be offset by reductions in other regions not evaluated by EIA, because the number of overall plant additions would change only very little from EIA's reference case, if at all.

Table 4-10 below compares EIA's coal-fired capacity additions forecasts for all four transportation rate scenarios on a national basis to the AEO 2005 reference case.<sup>49</sup>

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<sup>49</sup> Id.

<b>Table 4-10</b>						
<b>Coal-fired Generating Capacity Additions (Gigawatts) – National Totals</b>						
				<b>Percent Change from AEO 2005</b>		
<b>Rate Scenario</b>	<b>2010</b>	<b>2015</b>	<b>2025</b>	<b>2010</b>	<b>2015</b>	<b>2025</b>
Low7pct	1.8	8.4	87.1	0.0	1.2	0.2
Low4pct	1.8	8.3	87.6	0.0	0.0	0.8
AEO2005	1.8	8.3	86.9	-	-	-
High4pct	1.8	8.3	86.9	0.0	0.0	0.0
High7pct	1.8	8.3	86.7	0.0	0.0	-0.2

As Table 4-10 shows, even with *twice* the expected reduction in transportation rates out of the PRB (represented by the Low7pct scenario) there would be minimal coal-fired generation capacity added.

### **4.5.3 Summary of Study Results for Coal Production, Consumption, and Coal-Fired Energy Generation on a National and Regional Basis**

The Low4pct scenario—the most likely scenario to result from the DM&E rail construction project—shows only de minimis changes in coal production, consumption and coal-fired energy generation. Even under the other 3 scenarios studied, at the national level, the projected changes in total coal production, consumption and coal-fired electricity generation would be very small.<sup>50</sup>

Changes in the regional projections of coal consumption and coal-fired generation would be similarly small. As explained in the EIA report (at 8), regional projections of coal production would vary somewhat, with any changes in coal production for Wyoming PRB coal resulting in increased (from changes in transportation rates) production for that region's coal being offset by corresponding changes in coal output projected for other supply regions. And any changes would be small. For example, for the three years evaluated (2010, 2015, and 2025), the

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<sup>50</sup> EIA Report, at 8.

projected changes in the level of Wyoming PRB coal production were only about 1 percent different from the AEO 2005 reference case for the Low4pct and High4pct scenarios and only approximately 3 percent different than the AEO 2005 reference case for the Low7pct and High7pct scenarios.<sup>51</sup>

#### **4.5.4 Potential Effects on Electric Power Sector Emissions on a National and Regional Basis**

The study also showed that the small degree of changes in coal production, coal consumption and coal-fired generation would translate to minimal changes in emissions from the electric power sector. As the EIA Report explains, the Clean Air Act Amendments of 1990 would dampen any changes in sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) emissions, since power plants must comply with mandated emissions limits even if they change their coal use.<sup>52</sup> Sulfur dioxide and nitrogen oxide emissions will be further reduced by the Clean Air Interstate Rule (CAIR) adopted by EPA on March 10, 2005, after EIA's sensitivity analyses were run in this case. (That rule is discussed in more detail below.)

##### Sulfur Dioxide

Table 4-11 compares regional and national SO<sub>2</sub> emissions between the AEO 2005 reference case and the most likely Low4pct scenario.<sup>53</sup>

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<sup>51</sup> Id.

<sup>52</sup> Id., at 6.

<sup>53</sup> Values taken from EIA Report, Tables 3, 4 and 5 on pages 9 to 14.

<b>Table 4-11</b> <b>Sulfur Dioxide (SO<sub>2</sub>) Emissions (Million Short Tons)</b> <b>Comparing the AEO 2005 and the Low4pct Scenario</b>									
EMM Region	AEO 2005			Low4pct			Percent Change from AEO 2005		
	2010	2015	2025	2010	2015	2025	2010	2015	2025
ECAR	2.72	2.59	2.54	2.72	2.54	2.48	0.0	-1.9	-2.4
MAIN	0.81	0.79	0.73	0.82	0.79	0.73	1.2	0.0	0.0
MAPP	0.34	0.33	0.33	0.34	0.33	0.33	0.0	0.0	0.0
SERC	2.48	2.33	2.41	2.47	2.33	2.40	-0.4	0.0	-0.4
MAAC	1.03	1.03	1.02	1.04	1.08	1.09	1.0	4.9	6.9
5 Region Total	7.38	7.07	7.03	7.39	7.07	7.03	0.1	0.0	0.0
<b>National Total</b>	<b>9.29</b>	<b>8.97</b>	<b>8.95</b>	<b>9.30</b>	<b>8.96</b>	<b>8.95</b>	<b>0.1</b>	<b>-0.1</b>	<b>0.0</b>

These results show that SO<sub>2</sub> emissions would vary only slightly within each of the five EMM regions. Indeed, there would be virtually no change when the regions are examined in aggregate, or on a national basis.

For example in 2015, the 0.05 million short ton *decrease* in SO<sub>2</sub> emissions in the ECAR region (a 1.9 percent decrease for that region) would be exactly offset by the 0.05 million short ton *increase* in the MAAC region (a 4.9 percent increase for that region), with no difference in emissions when the five regions are viewed as a whole. Similarly in 2025, the 0.06 million short ton *decrease* in SO<sub>2</sub> emissions in the ECAR region (a 2.4 percent decrease for that region) and the 0.01 million short ton *decrease* in SO<sub>2</sub> emissions in the SERC region (a 0.4 percent decrease for that region) would be exactly offset by the 0.07 million short ton *increase* in the MAAC region (a 6.9 percent increase for that region), with no difference in emissions between the five region totals.

Table 4-12 compares on a national basis the difference in SO<sub>2</sub> emissions between the AEO 2005 reference case and the four transportation rate scenarios that were studied.<sup>54</sup>

<b>Table 4-12</b>						
<b>Sulfur Dioxide (SO<sub>2</sub>) Emissions (Million Short Tons) - National Totals</b>						
				<b>Percent Change from AEO 2005</b>		
<b>Rate Scenario</b>	<b>2010</b>	<b>2015</b>	<b>2025</b>	<b>2010</b>	<b>2015</b>	<b>2025</b>
Low7pct	9.30	8.95	8.96	0.1	-0.2	0.1
Low4pct	9.30	8.96	8.95	0.1	-0.1	0.0
AEO2005	9.29	8.97	8.95	-	-	-
High4pct	9.29	8.93	8.95	0.0	-0.4	0.0
High7pct	9.37	8.96	8.95	0.9	-0.1	0.0

As Table 4-12 shows, even under the Low7pct scenario—with transportation rate changes at twice the level expected by the Board—emissions in sulfur dioxide would vary by less than one percent through 2025 from the AEO 2005 reference case.

As previously noted, on March 10, 2005, EPA signed the final version of CAIR. CAIR regulates emissions of SO<sub>2</sub> and NO<sub>x</sub> from existing and new electric utility power plants in 28 eastern states and the District of Columbia. Emission reductions will occur in two phases, with compliance dates in 2010 and 2015 for SO<sub>2</sub> and 2009 and 2015 for NO<sub>x</sub>.

EPA's website states that, in 2010, CAIR will reduce SO<sub>2</sub> emissions by 4.3 million tons—45 percent lower than 2003 levels in states affected by the rule. By 2015, CAIR is expected to reduce SO<sub>2</sub> emissions by 5.4 million tons, or 57 percent from 2003 levels in these states. At full implementation, CAIR will reduce power plant SO<sub>2</sub> emissions in the affected states to just 2.5 million tons, 73 percent below 2003 emissions levels. According to EPA, in

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<sup>54</sup> Id.

1990, national SO<sub>2</sub> emissions from power plants were 15.7 million tons compared to 3.5 million tons that will be achieved with CAIR (see [www.epa.gov/cair/basic.html](http://www.epa.gov/cair/basic.html)).

### Nitrogen Oxides

The study also showed almost no change in regional and national NO<sub>x</sub> emissions compared to the AEO 2005 reference case.<sup>55</sup> Table 4-13 compares NO<sub>x</sub> emissions between the AEO 2005 reference case and the Low4pct scenario (the most likely scenario).<sup>56</sup>

<b>Table 4-13</b> <b>NO<sub>x</sub> Emissions (Million Short Tons)</b> <b>Comparing the AEO 2005 and the Low4pct Scenario</b>									
EMM Region	AEO 2005			Low4pct			Percent Change from AEO 2005		
	2010	2015	2025	2010	2015	2025	2010	2015	2025
ECAR	0.97	0.98	0.98	0.97	0.98	0.98	0.0	0.0	0.0
MAIN	0.81	0.79	0.73	0.82	0.79	0.73	1.2	0.0	0.0
MAPP	0.34	0.33	0.33	0.34	0.33	0.33	0.0	0.0	0.0
SERC	0.86	0.89	0.94	0.86	0.89	0.94	0.0	0.0	0.0
MAAC	0.24	0.24	0.24	0.24	0.24	0.24	0.0	0.0	0.0
5 Region Total	3.22	3.23	3.22	3.23	3.23	3.22	0.3	0.0	0.0
<b>National Total</b>	<b>3.99</b>	<b>4.09</b>	<b>4.29</b>	<b>3.99</b>	<b>4.09</b>	<b>4.29</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

Table 4-14 compares NO<sub>x</sub> emissions on a national basis between the AEO 2005 reference case and all four scenarios in the sensitivity analysis.<sup>57</sup>

<sup>55</sup> EIA Report, at 6.

<sup>56</sup> Values taken from EIA Report, Tables 3, 4 and 5 on pages 9 to 14.

<sup>57</sup> Id.

<b>Table 4-14</b>						
<b>NO<sub>x</sub> Emissions (Million Short Tons) - National Totals</b>						
				<b>Percent Change from AEO 2005</b>		
<b>Rate Scenario</b>	<b>2010</b>	<b>2015</b>	<b>2025</b>	<b>2010</b>	<b>2015</b>	<b>2025</b>
Low7pct	3.99	4.10	4.29	0.0	0.2	0.0
Low4pct	3.99	4.09	4.29	0.0	0.0	0.0
AEO2005	3.99	4.09	4.29	-	-	-
High4pct	3.99	4.09	4.29	0.0	0.0	0.0
High7pct	3.98	4.09	4.28	-0.3	0.0	-0.2

As Table 4-14 shows, even if the transportation rates were decreased by twice what the Board expects, there would be essentially no change in NO<sub>x</sub> emissions compared to the AEO 2005 reference case (“*across the cases, national-level NO<sub>x</sub> emissions are never projected to vary from the AEO2005 reference case by more than 0.1 percent for 2010, 2015, and 2025*”).<sup>58</sup>

As discussed previously, on March 10, 2005, EPA signed the final version of CAIR. CAIR regulates emissions of SO<sub>2</sub> and NO<sub>x</sub> from existing and new electric utility power plants in 28 states and the District of Columbia. As with SO<sub>2</sub>, CAIR will achieve significant NO<sub>x</sub> reductions in the affected states. By 2015, EPA expects that CAIR will reduce power plant NO<sub>x</sub> emissions by 2 million tons, achieving a regional emissions level of 1.3 million tons, a 61 percent reduction from 2003 levels. In 1990, national NO<sub>x</sub> emissions from power plants were 6.7 million tons, compared to 2.2 million tons that will be achieved by CAIR (see [www.epa.gov/cair/basic.html](http://www.epa.gov/cair/basic.html)).

#### Carbon Dioxide

The study indicated that CO<sub>2</sub> emission rates differ only slightly across coal types, so that any changes in forecasted emissions on a national or regional basis would primarily be due to

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<sup>58</sup> EIA Report, at 6.

variations in the forecasted quantities of the overall amount of coal that would be consumed.<sup>59</sup>

Table 4-15 compares regional and national CO<sub>2</sub> emissions that would result from the AEO 2005 reference case and the most likely scenario (the Low4pct scenario).<sup>60</sup>

<b>Table 4-15</b> <b>Carbon Dioxide (CO<sub>2</sub>) Emissions (Million Metric Tons)</b> <b>Comparing the AEO 2005 and the Low4pct Scenario</b>									
EMM Region	AEO 2005			Low4pct			Percent Change from AEO 2005		
	2010	2015	2025	2010	2015	2025	2010	2015	2025
ECAR	641.3	666.9	698.0	641.7	667.8	699.1	0.1	0.1	0.2
MAIN	248.6	261.9	268.9	249.2	262.7	269.2	0.2	0.3	0.1
MAPP	164.1	172.9	187.8	164.1	173.0	188.4	0.0	0.1	0.3
SERC	590.0	628.4	791.1	590.0	628.3	789.6	0.0	0.0	-0.2
MAAC	178.2	189.9	223.8	178.3	189.4	222.2	0.0	-0.3	-0.7
5 Region Total	1,822.2	1,920.0	2,169.5	1,823.3	1,921.3	2,168.5	0.1	0.1	0.0
<b>National Total</b>	<b>2,885.7</b>	<b>3,075.8</b>	<b>3,652.2</b>	<b>2,886.5</b>	<b>3,076.9</b>	<b>3,653.1</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

As Table 4-15 shows, there would be very little change in CO<sub>2</sub> emissions as a result of this project. The highest increase in CO<sub>2</sub> emissions would be in the ECAR region, which would experience a 0.2 percent increase. The MAAC region would experience the lowest decrease, a decrease of 0.7 percent. On a national basis, there would be less than a one percent increase in CO<sub>2</sub> emissions.

Table 4-16 compares on a national basis the CO<sub>2</sub> emissions that would result from the AEO 2005 reference case with all four scenarios.<sup>61</sup>

<sup>59</sup> Id., at 7-8.

<sup>60</sup> Values taken from EIA Report, Tables 3, 4 and 5 on pages 9 to 14.

<sup>61</sup> Id.

<b>Table 4-16</b>						
<b>Carbon Dioxide (CO<sub>2</sub>) Emissions (Million Metric Tons) - National Totals</b>						
				<b>Percent Change from AEO 2005</b>		
<b>Rate Scenario</b>	<b>2010</b>	<b>2015</b>	<b>2025</b>	<b>2010</b>	<b>2015</b>	<b>2025</b>
Low7pct	2,887.24	3,078.73	3,653.88	0.1	0.1	0.0
Low4pct	2,886.53	3,076.92	3,653.11	0.0	0.0	0.0
AEO2005	2,885.67	3,075.81	3,652.15	-	-	-
High4pct	2,885.50	3,076.48	3,649.51	0.0	0.0	-0.1
High7pct	2,885.36	3,076.34	3,646.78	0.0	0.0	-0.1

The study shows little change in CO<sub>2</sub> emissions compared to the AEO 2005 reference case, even under the Low7pct scenario, which assumes transportation rates would decrease by twice what the Board anticipates, as shown in the results.<sup>62</sup>

### Mercury

The mercury (Hg) content of coal varies considerably across U.S. coal basins, and mercury removal rates at power plants vary considerably based on plant equipment used and the type of coal burned.<sup>63</sup> The NEMS model will not select a coal supply region to fulfill the requirements of a coal demand region if that supply will violate any existing environmental laws. When EIA ran its NEMS analyses, mercury emissions in the electric power sector were not yet regulated. Therefore, both in the AEO 2005 reference case and in the four scenarios used in the rate sensitivity analyses, the NEMS model assumed that mercury emissions would be unconstrained.<sup>64</sup> In other words, the NEMS model did not attempt to take into account which coal supply region should supply each coal demand region to address mercury emissions constraints.

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<sup>62</sup> See also results discussed in EIA Report, at 8.

<sup>63</sup> See id. at 7.

<sup>64</sup> Id.

The NEMS study for this case shows that, nationally, mercury emissions would increase less than one percent, even when all sources of coal, including so-called “waste coal” are considered (waste coal is the low-energy value discards of the coal mining industry primarily accumulated in the Eastern United States mostly between 1900 and 1970, which has a higher mercury content).<sup>65</sup> As EIA explained in the report, most of the changes in mercury emissions can be explained by the type of plant consuming waste coal, rather than changes in transportation rates for subbituminous coal out of the PRB that might result from DM&E’s entrance into the market.<sup>66</sup>

Table 4-17 compares on a national basis mercury emissions between the AEO 2005 reference case and all four scenarios of the sensitivity analysis.<sup>67</sup>

<b>Table 4-17</b>						
<b>Mercury Emissions (Short Tons) - National Totals (All Coal)</b>						
				<b>Percent Change from AEO 2005</b>		
<b>Rate Scenario</b>	<b>2010</b>	<b>2015</b>	<b>2025</b>	<b>2010</b>	<b>2015</b>	<b>2025</b>
Low7pct	54.45	55.29	56.04	0.7	0.3	0.1
Low4pct	53.92	55.31	55.98	-0.3	0.3	0.0
AEO2005	54.08	55.12	55.97	-	-	-
High4pct	53.29	54.44	55.25	-1.5	-1.2	-1.3
High7pct	53.40	54.36	55.05	-1.3	-1.4	-1.6

EIA also provided the same comparison *excluding* waste coal, with the results shown in Table 4-18.

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<sup>65</sup> Id.

<sup>66</sup> Id.

<sup>67</sup> Values taken from EIA Report, Tables 3, 4 and 5 on pages 9 to 14.

<b>Table 4-18</b>						
<b>Mercury Emissions (Short Tons) - National Totals (Excluding Waste Coal)</b>						
				<b>Percent Change from AEO 2005</b>		
<b>Rate Scenario</b>	<b>2010</b>	<b>2015</b>	<b>2025</b>	<b>2010</b>	<b>2015</b>	<b>2025</b>
Low7pct	50.98	52.04	54.48	0.1	0.0	0.4
Low4pct	50.83	52.12	54.30	-0.2	0.2	0.1
AEO2005	50.93	52.02	54.25	-	-	-
High4pct	50.51	51.80	54.18	-0.8	-0.4	-0.1
High7pct	50.69	51.65	54.09	-0.5	-0.7	-0.3

As Table 4-18 shows, when waste coal is excluded from the analysis, the projected change in mercury emissions would be less than 1 percent under all scenarios.

The study showed some increases in mercury emissions on a regional basis. Table 4-19 compares mercury emissions (*including* waste coal) associated with the AEO 2005 reference case with those associated with the Low4pct scenario (the most likely scenario).<sup>68</sup> (EIA did not break down regional mercury emissions excluding waste coal.)

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<sup>68</sup> Id.

<b>Table 4-19</b> <b>Mercury Emissions (Short Tons) Regional Totals (All Coal)</b> <b>Comparing the AEO 2005 and the Low4pct Scenario</b>									
EMM Region	AEO 2005			Low4pct			Percent Change from AEO 2005		
	2010	2015	2025	2010	2015	2025	2010	2015	2025
ECAR	12.83	13.19	13.87	13.97	13.61	13.69	8.9	3.2	-1.3
MAIN	5.84	6.16	6.29	5.87	6.18	6.30	0.5	0.3	0.2
MAPP	3.74	3.82	3.89	3.74	3.82	3.90	0.0	0.0	0.3
SERC	11.03	11.31	12.24	10.80	11.17	12.23	-2.1	-1.2	-0.1
MAAC	5.28	5.07	3.76	4.26	4.90	3.93	-19.3	-3.4	4.5
5 Region Total	38.72	39.55	40.05	38.64	39.68	40.05	-0.2	0.3	0.0
<b>National Total</b>	<b>54.08</b>	<b>55.12</b>	<b>55.97</b>	<b>53.92</b>	<b>55.31</b>	<b>55.98</b>	<b>-0.3</b>	<b>0.3</b>	<b>0.0</b>

As explained in the EIA Report, most of the projected changes in mercury emissions in the SERC and ECAR regions are attributable to how much high-mercury waste coal would likely be used in those regions.<sup>69</sup> And, as EIA noted, the projected increased mercury emissions in the ECAR region would be nearly offset by the projected decrease in mercury emissions in the adjacent MAAC region.<sup>70</sup> As EIA observed, the same amount of high-mercury waste coal would be used whether or not the DM&E line is constructed, but in one case it would be used by plants in the ECAR region, while in another case the waste coal would be used by plants in the MAAC

<sup>69</sup> EIA Report, at 7.

<sup>70</sup> Id.

region.<sup>71</sup> And the aggregate mercury emissions for the ECAR and MAAC regions in 2010 would be less than one percent higher in the Low4pct scenario than in the AEO 2005 reference case.<sup>72</sup>

On March 15, 2005, EPA finalized the first-ever federal regulation limiting emissions of mercury from coal-fired power plants. The rule sets individual caps on total utility mercury emissions from 50 states, the District of Columbia, and two Tribal lands in Utah, New Mexico, and Arizona. The caps will reduce total nationwide utility mercury emissions (currently estimated as 48 tons annually) to 38 tons in 2010, and then to 15 tons in 2018. As EIA indicated,<sup>73</sup> any actions taken to comply with future emissions restrictions “would likely further dampen the impacts of the changes in coal transportation rates” as a result of this project.<sup>74</sup> As a result, the variability in mercury emissions due to changes in waste coal use in the NEMS study may be overstated.

#### **4.6 SEA’S CARBON MONOXIDE AND PARTICULATE ANALYSIS**

The NEMS study did not examine the potential impact of this project on air emissions of carbon monoxide (CO) and particulates (PM10). However, SEA estimated the impact on those emissions that would result from the slight increase in PRB coal production shown by the NEMS model. SEA based this estimate on the different properties of coal produced in different supply regions. Since EIA’s coal production data is the only data provided by EIA that identifies changes to coal types (compare Table 4-4 and Table 4-6, above), SEA assumed that coal consumption would effectively be equivalent to coal production.

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<sup>71</sup> Shifts in where waste coal is used would be attributable to changes in the transportation cost. But not all power plants are capable of using waste coal, and only those that already have that capability would use waste coal.

<sup>72</sup> Values taken from EIA Report, Tables 3, 4 and 5 on page 7.

<sup>73</sup> EIA Report, at 7.

<sup>74</sup> The EPA mercury rules would not result in reductions in mercury for some years. But, assuming that the DM&E project is approved by the Board and the cooperating agencies, it will also take several years for the proposed line to be built and become fully operational.

Because coal production in supply regions outside the PRB would decrease with an increase in PRB coal, SEA needed to determine the potential CO and PM10 emissions from coal in each NEMS supply region. As EIA noted with regard to CO<sub>2</sub> and mercury,<sup>75</sup> coal from different supply regions has different chemical properties, potentially resulting in different emissions when burned for production of electricity. For example, PRB coal is recognized as having a lower sulfur content than Appalachian coal. Therefore, SEA needed to consider the amount of CO and PM10 emissions from each type of coal. The CO and PM10 emissions for coal from each supply region are shown in Tables 4-20 to 4-23, below. With this information, SEA determined the increases or decreases of CO and PM10 emissions that would likely occur for each of the four coal supply regions as a result of DM&E's proposal.

In calculating the CO and PM10 emissions associated with coal production increases, SEA used emissions levels based on current Best Available Control Technology (BACT) data. BACT reflects the lowest emissions achievable with current emission control equipment. BACT emissions levels can be multiplied by the amount of coal to estimate the amount of emissions that would result from burning the coal. Use of BACT emissions levels likely understates existing emissions levels, as many coal-burning facilities are not subject to BACT emissions levels, resulting in higher total CO and PM10 emissions than estimated by SEA. Conversely, use of BACT for estimating future emissions likely overestimates future emissions levels, as it can be expected that over time BACT will improve, resulting in future facilities being required to attain even lower emissions than are possible today. However, in the absence of specific data about actual emissions levels for each and every coal-fired electricity generating facility in DM&E's core markets, use of BACT emissions levels provides a reasonable way to estimate the relative potential emissions of CO and PM10 based on the quantity of coal from each supply region.

The projected changes in CO and PM10 emissions in each coal supply region under the Low4pct and Low7pct scenarios in comparison to the base-line case (the AEO 2005 projections) are shown in the following tables.

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<sup>75</sup> EIA Report, at 7.

**Table 4-20**  
**Projected CO Emissions**  
**Comparing the AEO 2005 and the Low4pct Scenario**

Coal Region	CO Emission Rate (tons of CO / million tons of coal)	AEO 2005			Low4pct			Percent Change from AEO 2005		
		2010	2015	2025	2010	2015	2025	2010	2015	2025
Appalachia	1,977.6	796,973	761,376	802,906	798,950	755,443	794,995	0.2	-0.8	-1.0
Interior	1,616.0	256,944	253,712	294,112	255,328	248,864	294,112	-0.6	-1.9	0.0
PRB	1,316.3	654,211	708,180	833,231	656,844	723,976	841,128	0.4	2.2	0.9
Other Western	1,406.2	251,717	265,779	375,466	248,904	264,373	378,279	-1.1	-0.5	0.7
<b>National Total</b>		<b>1,959,845</b>	<b>1,989,048</b>	<b>2,305,714</b>	<b>1,960,027</b>	<b>1,992,656</b>	<b>2,308,514</b>	<b>0.0</b>	<b>0.2</b>	<b>0.1</b>

**Table 4-21**  
**Projected CO Emissions**  
**Comparing the AEO 2005 and the Low7pct Scenario**

Coal Region	CO Emission Rate (tons of CO / million tons of coal)	AEO 2005			Low7pct			Percent Change from AEO 2005		
		2010	2015	2025	2010	2015	2025	2010	2015	2025
Appalachia	1,977.6	796,973	761,376	802,906	793,018	751,488	783,130	-0.5	-1.3	-2.5
Interior	1,616.0	256,944	253,712	294,112	252,096	245,632	294,112	-1.9	-3.2	0.0
PRB	1,316.3	654,211	708,180	833,231	671,323	731,874	855,608	2.6	3.3	2.7
Other Western	1,406.2	251,717	265,779	375,466	244,686	261,561	372,654	-2.8	-1.6	-0.7
<b>National Total</b>		<b>1,959,845</b>	<b>1,989,048</b>	<b>2,305,714</b>	<b>1,961,123</b>	<b>1,990,555</b>	<b>2,305,503</b>	<b>0.1</b>	<b>0.1</b>	<b>0.0</b>

**Table 4-22**  
**Projected PM10 Emissions**  
**Comparing the AEO 2005 and the Low4pct Scenario**

Coal Region	PM10 Emission Rate (tons of PM10 / million tons of coal)	AEO 2005			Low4pct			Percent Change from AEO 2005		
		2010	2015	2025	2010	2015	2025	2010	2015	2025
Appalachia	309.0	124,527	118,965	125,454	124,836	118,038	124,218	0.2	-0.8	-1.0
Interior	252.5	40,148	39,643	45,955	39,895	38,885	45,955	-0.6	-1.9	0.0
PRB	205.7	102,220	110,653	130,192	102,632	113,121	131,426	0.4	2.2	0.9
Other Western	219.7	39,331	41,528	58,667	38,891	41,308	59,106	-1.1	-0.5	0.7
<b>National Total</b>		<b>306,226</b>	<b>310,789</b>	<b>360,268</b>	<b>306,254</b>	<b>311,353</b>	<b>360,705</b>	<b>0.0</b>	<b>0.2</b>	<b>0.1</b>

**Table 4-23**  
**Projected PM10 Emissions**  
**Comparing the AEO 2005 and the Low7pct Scenario**

Coal Region	PM10 Emission Rate (tons of PM10 / million tons of coal)	AEO 2005			Low7pct			Percent Change from AEO 2005		
		2010	2015	2025	2010	2015	2025	2010	2015	2025
Appalachia	309.0	124,527	118,965	125,454	123,909	117,420	122,364	-0.5	-1.3	-2.5
Interior	252.5	40,148	39,643	45,955	39,390	38,380	45,955	-1.9	-3.2	0.0
PRB	205.7	102,220	110,653	130,192	104,894	114,355	133,689	2.6	3.3	2.7
Other Western	219.7	39,331	41,528	58,667	38,232	40,869	58,227	-2.8	-1.6	-0.7
<b>National Total</b>		<b>306,226</b>	<b>310,789</b>	<b>360,268</b>	<b>306,425</b>	<b>311,024</b>	<b>360,235</b>	<b>0.1</b>	<b>0.1</b>	<b>0.0</b>

As Tables 4-20 to 4-23 show, comparing the Low4pct and Low7pct scenarios to the AEO 2005 reference case for all the study periods (2010, 2015, and 2025) show only a small (less than 1 percent) changes in CO and PM10 emissions.

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## **4.7 SUMMARY OF THE NEMS RATE SENSITIVITY ANALYSES**

The overall result shown by the rate sensitivity analyses using the NEMS model is that, contrary to the court's expectations expressed in Mid States, the DM&E PRB Expansion Project would likely produce little change in total coal production, coal consumption, coal-fired electricity generation and electrical power sector emissions. Rather, as the EIA report states, the aggregate amount of coal used and the emissions associated with its use in each consuming region would be nearly unchanged from the base-line AEO 2005 forecast.

On a national level, the increases predicted for SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>, CO, PM10, and mercury would generally be below 1 percent. In one region, it appears that mercury emissions would be somewhat larger. However, this increase would be offset by a corresponding decrease in mercury emissions in a neighboring region. Moreover, the regional increase shown for mercury emissions reflects how the NEMS model accounts for waste coal more than an increased consumption of total coal. Finally, the NEMS model did not take into account any regulation of mercury emissions. On March 15, 2005, EPA issued final rules designed to control mercury emissions from power plants. As EIA has indicated, any actions taken to comply with EPA's new mercury rules would likely further dampen the impacts of the changes in coal transportation rates as a result of this project.<sup>76</sup>

## **4.8 THE IMPACT ON COAL CONSUMPTION ON A LOCAL BASIS CANNOT BE DETERMINED**

As discussed above, the NEMS analyses show that, both regionally and nationally, the impact of this project on air emissions would be nearly unchanged. But what local impacts the project might have cannot be determined using the NEMS model. The NEMS study indicates that, under the Low4pct scenario, as much as 3 million additional tons of coal could be consumed in 2025 over the 1,425 million tons already projected to be burned without such a decrease in transportation rates.<sup>77</sup> But to be able to reasonably foresee the likely impacts of this

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<sup>76</sup> Id.

<sup>77</sup> Id. at 13.

project on a local level, one would need to know not only what existing or new power plants would actually use DM&E's service, but also whether they would otherwise not burn PRB coal, not burn as much coal, or burn a different mix of coal. This cannot be determined with any degree of confidence for a variety of reasons:

- DM&E does not yet have any commitments from utilities to serve specific power plants and is unlikely to have such commitments before the railroad actually is in a position to transport PRB coal (i.e., the project is finally approved, financing is obtained, and the new line is built).
- DM&E's core markets cover a broad geographic area; there are numerous power plants in each of those markets; and, as the Board found in the 1998 Decision, DM&E would likely serve only a portion of the plants in each market.
- To the extent the existing power plants that would choose to use DM&E's service already use PRB coal, DM&E's service would simply substitute for PRB coal now carried by BNSF or UP.
- How much PRB coal a power plant would decide to use would depend on myriad other factors, including the price of coal versus the cost of alternative fuels (such as natural gas), the requirements of applicable environmental laws at the time, the state of the nation's economy and power needs, and whether the plant is equipped to burn PRB coal versus coal from other regions. Thus, even for power plants that can burn a mix of different types of coals, it is unclear how much more PRB coal they could or would burn as a result of this project. (NEMS considers these factors, but only on a regional or national basis.)
- According to EIA's AEO 2005, new power plants will be built regardless of whether the DM&E line is built, although there is no way for SEA to ascertain exactly where or when they might be built. Nor can SEA determine how much PRB coal would be supplied to these new power plants, and whether the coal would be moved by DM&E. But it is clear that some new power plants may use PRB coal regardless of whether the DM&E line is built.
- Finally, mercury regulation may lead to decreased reliance on PRB coal in the future, as PRB coal is higher in mercury than other coals (such as Appalachian coal).

In short, SEA cannot rule out the possibility that, at certain locations, there could be more PRB coal consumed as a result of this project—and, therefore, an increase in certain emissions. But because of the inherent uncertainty and the data gaps discussed above, the information SEA would need to determine the locations where emissions would increase on a local basis—and to measure the amount of such an increase—is unavailable. Thus, any attempt by SEA to quantify air emissions on a local basis would lack a sound foundation and would instead be largely conjectural.

Under these circumstances, as the court noted in Mid States, when the information needed to examine reasonably foreseeable impacts is missing and unavailable, the CEQ rules at 40 CFR 1502.22 provide that the agency should first explain that the information is incomplete or unavailable, as SEA has done here. The agency should then explain the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment (see section 4.8.1 below); summarize the existing credible scientific evidence that is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment (see section 4.8.2 below); and evaluate the potential impacts given the informational limitations that it faces (see section 4.8.3 below).

#### **4.8.1 Without Knowing the Location and Extent of Any Local Impact on Coal Consumption, SEA Cannot Determine the Potential Impact on Local Air Emissions**

The missing and unavailable information described above is critical to SEA's ability to evaluate the extent to which reasonably foreseeable significant and adverse air emissions on a local level would result from this project. If the additional coal projected by the NEMS study's Low4pct scenario (the most likely scenario) were widely dispersed among a number of power plants throughout a broad geographic area, then the local impacts on air emissions would also be widely dispersed and therefore likely de minimis. On the other hand, if all of the additional coal were consumed by a few power plants located in the same general area, then there could be some adverse air emission impacts on a local basis. But any potential impacts would be tempered by restrictions on specific power plant emissions. Thus, what might actually happen at specific power plants as a result of this project is unknowable without being able to determine where additional PRB coal would be burned that would not be burned absent this project.

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#### **4.8.2 While the Extent of Any Local Impact on Air Emissions Is Unknown, The Nature of the Potential Impacts Is Known**

This section summarizes the existing credible scientific evidence on each of the pollutants that are emitted by power plants: sulfur dioxide, nitrogen oxides, carbon monoxide, particulate matter, carbon dioxide, and mercury.

##### **Sulfur Dioxide**

Sulfur dioxide (SO<sub>2</sub>) results from the burning of fossil fuels containing sulfur.<sup>78</sup> Emissions of SO<sub>2</sub> come primarily from stationary sources such as coal-burning power plants and other stationary facilities burning fossil fuels, including coal.<sup>79</sup>

SO<sub>2</sub> contributes to the formation of fine particles.<sup>80</sup> SO<sub>2</sub> emissions at high concentrations may affect breathing, particularly by aggravating existing respiratory diseases such as asthma, as well as cardiovascular disease.<sup>81</sup> Sensitive populations such as children and the elderly are most likely to be affected. In addition, SO<sub>2</sub> is a primary component of acid rain formation.<sup>82</sup> Acid rain has been found to cause acidification of water bodies (lakes and streams) and damage crops, historic buildings and other exterior structures such as statues.<sup>83</sup> Finally, SO<sub>2</sub> can contribute to the formation of minute particles in the atmosphere, impairing visibility, particularly in areas of high scenic value such as national parks.<sup>84</sup>

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<sup>78</sup> EPA's website at [www.epa.gov/air/urbanair/SO2/what1.html](http://www.epa.gov/air/urbanair/SO2/what1.html); "Acid Rain," Microsoft® Encarta® Online Encyclopedia 2005 available at <http://encarta.msn.com>.

<sup>79</sup> See EPA's website at [www.epa.gov/air/urbanair/SO2/what1.html](http://www.epa.gov/air/urbanair/SO2/what1.html).

<sup>80</sup> American Lung Association's website at [www.lungusa.org](http://www.lungusa.org).

<sup>81</sup> EPA's website at [www.epa.gov/air/urbanair/SO2/what1.html](http://www.epa.gov/air/urbanair/SO2/what1.html); American Lung Association's website at [www.lungusa.org](http://www.lungusa.org); U.S. Department of Health and Human Services, Toxicological Profile for Sulfur Dioxide, December 1998; and Wisconsin Department of Natural Resources' website at [www.dnr.state.wi.us](http://www.dnr.state.wi.us).

<sup>82</sup> Acid Rain, Microsoft® Encarta® Online Encyclopedia 2005 available at <http://encarta.msn.com>.

<sup>83</sup> EPA's website at [www.epa.gov/air/urbanair/SO2/chf1.html](http://www.epa.gov/air/urbanair/SO2/chf1.html); Hutchinson, T.C. and M. Havas, Effects of Acid Precipitation on Terrestrial Ecosystems, Plenum Press, New York, New York (1980).

<sup>84</sup> Information summarized from EPA's website at [www.epa.gov/air/urbanair/SO2/chf1.html](http://www.epa.gov/air/urbanair/SO2/chf1.html).

It is estimated that over 65 percent of SO<sub>2</sub> released into the air, or more than 13 million tons per year, comes from electric utilities, especially those that burn coal.<sup>85</sup> Other sources of SO<sub>2</sub> are industrial facilities that derive their products from raw materials like metallic ore, coal, and crude oil, or that burn coal or oil to produce heat.<sup>86</sup> Examples are petroleum refineries, cement manufacturing, and metal processing facilities. Also, locomotives, large ships, and some “nonroad” diesel equipment currently burn high sulfur fuel and release SO<sub>2</sub> emissions to the air in large quantities.<sup>87</sup>

SO<sub>2</sub> emissions from combustion at power plants are controlled by “scrubbing” the gas leaving the plant or by removing sulfur from the fuel before it is burned.<sup>88</sup> As discussed earlier in this chapter, EPA anticipates that CAIR will achieve significant SO<sub>2</sub> reductions in the 28 affected eastern states and the District of Columbia—over 70 percent from 2003 emissions levels.<sup>89</sup> These reductions will be in addition to the constraints imposed by the Clean Air Act Amendments of 1990.

## Nitrogen Oxides

Nitrogen oxides (NO<sub>x</sub>) include several compounds containing nitrogen and oxygen, including nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>).<sup>90</sup> Nitrogen oxides form during combustion at high temperatures.<sup>91</sup>

According to EPA, NO<sub>x</sub> compounds can cause lung irritation, bronchitis, and pneumonia, while lowering the body’s resistance to other respiratory infections.<sup>92</sup> The available scientific literature indicates that NO<sub>x</sub> is an important substance linked to the formation of ozone

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<sup>85</sup> See [www.epa.gov/air/urbanair/SO2/what1.html](http://www.epa.gov/air/urbanair/SO2/what1.html).

<sup>86</sup> Id.

<sup>87</sup> See [www.congeneration.net/SulfurDioxides.htm](http://www.congeneration.net/SulfurDioxides.htm).

<sup>88</sup> Id.

<sup>89</sup> See [www.epa.gov/cair/basic.html](http://www.epa.gov/cair/basic.html); [www.epa.gov/interstateairquality](http://www.epa.gov/interstateairquality).

<sup>90</sup> See website of Wisconsin Department of Natural Resources at [www.dnr.state.wi.us](http://www.dnr.state.wi.us).

<sup>91</sup> EPA Green Book - Criteria Pollutants. Available at [www.epa.gov/air/oaqps/greenbk](http://www.epa.gov/air/oaqps/greenbk).

<sup>92</sup> Id.

and, along with SO<sub>2</sub>, acid rain.<sup>93</sup> As noted above, acid rain damages crops, acidifies water bodies, and damages exterior structures. NO<sub>x</sub> also may contribute to algal blooms causing fish kills in aquatic systems.<sup>94</sup> Ozone, formed by the interaction of NO<sub>x</sub>, volatile organic compounds, and sunlight,<sup>95</sup> has been linked to a number of respiratory impacts including lung tissue damage leading to emphysema and other respiratory diseases, reduced lung function, increased sensitivity to other respiratory diseases, as well as aggravating existing conditions such as asthma.<sup>96</sup> While children and the elderly are most susceptible to ozone, respiratory function in otherwise healthy adults can be impaired by ozone exposure.<sup>97</sup> Ozone also impairs a plant's ability to produce and store food, reducing crop yields, plant growth, reproduction, and overall health.<sup>98</sup>

It has been estimated that utilities contribute 22 percent of NO<sub>x</sub> emissions.<sup>99</sup> NO<sub>x</sub> and the pollutants formed from NO<sub>x</sub> can be transported over long distances, following the pattern of prevailing winds in the United States.<sup>100</sup> This means that problems associated with NO<sub>x</sub> emissions are not confined to areas where NO<sub>x</sub> are emitted. Therefore, controlling NO<sub>x</sub> is often most effective if done from a regional perspective, rather than focusing on sources in any particular local area.<sup>101</sup>

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<sup>93</sup> *Id.*; "Acid Rain," Microsoft® Encarta® Online Encyclopedia 2005 available at <http://encarta.msn.com>; "Nitrogen Dioxide" at American Lung Association's website at <http://lungusa.org>.

<sup>94</sup> "Nitrogen Oxides and the Environment" at <http://cta.policy.net>.

<sup>95</sup> "Environmental Science Published for Everybody Round the Earth." Available at [www.atmosphere.mpg.de](http://www.atmosphere.mpg.de).

<sup>96</sup> EPA's website at [www.epa.gov/air/urbanair/NOX/hlth.html](http://www.epa.gov/air/urbanair/NOX/hlth.html); American Lung Association's website at [www.lungusa.org](http://www.lungusa.org); Wisconsin Department of Natural Resources' website at [www.dnr.state.wi.us](http://www.dnr.state.wi.us).

<sup>97</sup> EPA Green Book - Criteria Pollutants. Available at [www.epa.gov/air/oaqps/greenbk](http://www.epa.gov/air/oaqps/greenbk).

<sup>98</sup> *Id.* See also website of North Carolina State University, Agricultural Research Service, at [www.ces.ncsu.edu](http://www.ces.ncsu.edu).

<sup>99</sup> See [www.epa.gov/air/urbanair/nox/what.html](http://www.epa.gov/air/urbanair/nox/what.html); [www.ces.ncsu.edu](http://www.ces.ncsu.edu).

<sup>100</sup> See [www.epa.gov/air/urbanair/nox/effrt.html](http://www.epa.gov/air/urbanair/nox/effrt.html).

<sup>101</sup> *Id.*

As discussed above, under CAIR, EPA expects that NO<sub>x</sub> emissions from power plants in the affected states and the District of Columbia will be reduced significantly.<sup>102</sup>

### **Carbon Monoxide**

Carbon monoxide (CO) is a colorless, odorless, poisonous gas.<sup>103</sup> It results from the incomplete combustion of carbon-based fuels, primarily from vehicles.<sup>104</sup>

When inhaled, CO blocks oxygen from binding with hemoglobin in the lungs, reducing the amount of oxygen the lungs can uptake for delivery to the rest of the body.<sup>105</sup> CO poisoning can impair visual perception, manual dexterity, learning, and the performance of complex tasks. In extreme cases at high concentrations, CO poisoning can be fatal.<sup>106</sup>

EPA regulates CO emissions under the Clean Air Act Amendments of 1990. According to EPA, less than 1 percent of CO emissions in the U.S. comes from electric utilities.<sup>107</sup>

### **Particulate Matter**

Particulate matter (PM) includes particles of dust, soot, and chemicals ranging from 10 micrometers to 2.5 micrometers in diameter.<sup>108</sup> PM10 emissions at a coal-fired electricity generating facility result from dust-generating activities, including coal handling, crushing and

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<sup>102</sup> See [www.epa.gov/cair/basic.html](http://www.epa.gov/cair/basic.html); [www.epa.gov/interstateairquality](http://www.epa.gov/interstateairquality).

<sup>103</sup> EPA Green Book - Criteria Pollutants. Available at [www.epa.gov/air/oaqps/greenbk](http://www.epa.gov/air/oaqps/greenbk).

<sup>104</sup> "Carbon Monoxide," Microsoft® Encarta® Online Encyclopedia 2005 available at <http://encarta.msn.com>; [www.epa.gov/air/urbanair/co/what1.html](http://www.epa.gov/air/urbanair/co/what1.html).

<sup>105</sup> EPA Green Book - Criteria Pollutants. Available at [www.epa.gov/air/oaqps/greenbk](http://www.epa.gov/air/oaqps/greenbk).

<sup>106</sup> "Carbon Monoxide," Microsoft® Encarta® Online Encyclopedia 2005 available at <http://encarta.msn.com>; EPA Green Book - Criteria Pollutants. Available at [www.epa.gov/air/oaqps/greenbk](http://www.epa.gov/air/oaqps/greenbk); Clean Air Trust; "Carbon Monoxide" available at [www.cleanairtrust.org](http://www.cleanairtrust.org); Wisconsin Department of Natural Resources' website at [www.dnr.state.wi.us](http://www.dnr.state.wi.us).

<sup>107</sup> EPA's website at [www.epa.gov/air/airtrends/pdfs/CONational.pdf](http://www.epa.gov/air/airtrends/pdfs/CONational.pdf).

<sup>108</sup> "What is Particulate Matter," available at Air Info Now at [www.airinfo.org](http://www.airinfo.org); [www.epa.gov/air/urbanair/pm/what1.html](http://www.epa.gov/air/urbanair/pm/what1.html).

grinding, vehicular traffic, and combustion of fuel. Generally, PM10 emissions settle out of the air quickly, thus affecting only the area a short distance down wind of the emission point.

PM10 emissions have the potential to cause serious health problems. Children, the elderly, and those with cardiopulmonary diseases such as asthma and congestive heart disease are most susceptible to PM10 emissions.<sup>109</sup> Additionally, PM10 particles may contain harmful chemicals such as sulfates, which can be corrosive and cause damage to external structures similar to the impacts of acid rain.<sup>110</sup> PM10 emissions can also contribute to regional haze.<sup>111</sup>

EPA regulates PM10 emissions under the Clean Air Act Amendments of 1990. According to EPA, the range of PM10 emissions from electric utilities is between one and three percent of total PM10 emissions nationwide.<sup>112</sup>

### **Carbon Dioxide**

Carbon dioxide (CO<sub>2</sub>) is one of several compounds categorized as greenhouse gases.<sup>113</sup> Carbon dioxide is a product of the release of energy stored in carbon-based fuels (such as sugar and coal) for use by plants and animals (as in the case of sugar) or to generate heat during combustion to produce electricity (as for coal).<sup>114</sup>

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<sup>109</sup> American Lung Association's website at [www.lungusa.org](http://www.lungusa.org); Wisconsin Department of Natural Resources' website at [www.dnr.state.wi.us](http://www.dnr.state.wi.us); "Particles in Our Air - Concentrations and Health Effects," edited by R. Wilson and J. Spengler, Harvard School of Public Health (1996).

<sup>110</sup> Wisconsin Department of Natural Resources' website at [www.dnr.state.wi.us](http://www.dnr.state.wi.us); "Particulate Soot" at [www.cleanairtrust.org](http://www.cleanairtrust.org).

<sup>111</sup> *Id.*

<sup>112</sup> EPA's website at [www.epa.gov/air/airtrends/pdfs/PM10NationalNoCondensibles.pdf](http://www.epa.gov/air/airtrends/pdfs/PM10NationalNoCondensibles.pdf); [www.epa.gov/air/airtrends/pdfs/PM10NationalWithCondensibles.pdf](http://www.epa.gov/air/airtrends/pdfs/PM10NationalWithCondensibles.pdf).

<sup>113</sup> EIA's website at [www.eia.doe.gov](http://www.eia.doe.gov).

<sup>114</sup> "Carbon Dioxide," Microsoft® Encarta® Online Encyclopedia 2005 available at <http://encarta.msn.com>.

As a greenhouse gas, CO<sub>2</sub> allows sunlight to pass through the atmosphere but absorbs some of the radiant energy (heat) reflected from the Earth's surface.<sup>115</sup> Absorption and trapping of heat is believed to cause a gradual heating of the atmosphere and subsequently, increased surface temperatures.<sup>116</sup>

According to the available data, approximately 82 percent of the CO<sub>2</sub> emissions in 2001 resulted from burning fossil fuels, including coal, oil, and natural gas.<sup>117</sup> Carbon dioxide emissions currently are not regulated.

### **Mercury**

Mercury, which has only recently become a restricted pollutant, is found naturally in air, water, soil, and rock.<sup>118</sup> It occurs in several forms, including in a pure elemental form as well as combined with other substances in metallic, organic (carbon-based) compounds, and inorganic (non-carbon containing substances) compounds. Mercury occurs naturally in substances such as coal. When coal is burned, mercury is released as an emission. Coal-burning electricity generating facilities are known to be the largest non-natural source of mercury emissions in the United States, contributing 40 percent of the total national mercury emissions, which is approximately 1 percent of annual mercury emissions worldwide.<sup>119</sup>

After being emitted, mercury settles into water either directly or indirectly by being washed into streams, rivers, and lakes. Scientific studies show that, once in water, mercury is ingested and changed by certain microorganisms into highly toxic methylmercury, which can accumulate in shellfish and fish feeding on these microorganisms. Humans and other animals consuming large amounts of methyl mercury-containing fish and shellfish can be exposed to

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<sup>115</sup> See [www.eia.doe.gov](http://www.eia.doe.gov).

<sup>116</sup> "Global Warming - Frequently Asked Questions," National Oceanic and Atmospheric Administration's website at [www.ncdc.noaa.gov](http://www.ncdc.noaa.gov).

<sup>117</sup> Id.

<sup>118</sup> See EIA website at [www.epa.gov/mercury/about.htm](http://www.epa.gov/mercury/about.htm).

<sup>119</sup> See id.; [www.netl.doe.gov/publication/proceedings/O3/mercury/Bauer](http://www.netl.doe.gov/publication/proceedings/O3/mercury/Bauer).

harmful levels of methyl mercury.<sup>120</sup> The available data indicates that mercury exposure at high levels can lead to brain, heart, kidney, lung, and immune system damage. However, natural exposure to mercury or exposure through fish consumption generally is insufficient to cause these types of health concerns for adults.<sup>121</sup> It has been determined that exposure to methyl mercury can result in damage to the nervous systems or unborn babies and young children, resulting in impaired ability to think and learn.<sup>122</sup>

As previously noted, EPA's new mercury rule will act to constrain mercury emissions from power plants (including the plants that DM&E is expected to serve) in the future. Mercury regulation eventually could result in decreased reliance on PRB coal because PRB coal is higher in mercury than other coals, such as Appalachian coal.

#### **4.8.3 While The Project Is Not Expected to Result in Significant Air Impacts on a Regional or National Basis, There Could Be Potentially Significant Local Impacts at Undeterminable Locations**

As discussed above, the NEMS study shows that, both nationally and regionally, the impacts of this project on coal consumption and air emissions would be low. But the lack of critical information precludes SEA from being able to provide a quantitative assessment of potential air emissions from this project on a local level. The extent to which this project would result in local air quality impacts would depend on whether the relatively small amount of additional coal consumed as a result of this project would be widely dispersed to numerous power plants in DM&E's core markets or, alternatively, used by a small number of power plants concentrated within a narrower geographic area. However, SEA cannot make a reasoned assessment of the likelihood of either possibility.

To the extent that there would be air emission impacts on a local basis as a result of this project, applicable environmental regulations—including the Clean Air Act Amendments of 1990, the lower caps on NO<sub>x</sub> and SO<sub>2</sub> imposed in CAIR, and the mercury reductions mandated by EPA's new mercury rule—would act to constrain these air emissions. Moreover, any new

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<sup>120</sup> Id.; "Mercury (element)," Microsoft® Encarta® Online Encyclopedia 2005 available at <http://encarta.msn.com>.

<sup>121</sup> [www.epa.gov/mercury/about.htm](http://www.epa.gov/mercury/about.htm).

<sup>122</sup> Id.; U.S. Department of Health and Human Services, Toxicological Profile for Mercury, March 1999.

power plants that may use PRB coal transported by DM&E would have to comply with all applicable licensing requirements and emissions restrictions governing new power plants, thereby limiting the potential impact of their air emissions. Finally, any significant changes in the blend of coals burned by individual power plants that might use PRB coal transported by DM&E also would be subject to regulatory constraints.

## **4.9 CONCLUSIONS**

SEA has conducted a thorough and extensive evaluation of how consumption of PRB coal would change with reduced transportation rates that might occur from DM&E's entrance into the marketplace and what effect, if any, these changes would have on air quality. Based on the NEMS study, SEA has concluded that little additional coal would be consumed nationally and regionally as a result of this project, and that the associated impacts on national air emissions would be minor. Regionally, impacts on air emissions generally would also be small. Any regional increases would be offset by decreases in other regions and constrained by applicable environmental laws, including new regulatory requirements that are not reflected in the NEMS study: CAIR and EPA's mercury rule.

SEA also has concluded that it cannot rule out that, at certain locations, there could be more coal consumed as a result of this project, and, therefore, increased air emissions on a local level. However, because the information SEA would need to determine the specific location and meaningfully measure increased air emissions on a local basis cannot be determined, any attempt to predict and evaluate potential increased air emissions on a local level would be largely speculation. Therefore, SEA followed the procedures established by CEQ at 40 CFR 1502.22(b) for addressing impacts where critical information is unavailable or incomplete.

Given the minor increases in coal consumption and air emissions on a national and regional basis, and the lack of critical information needed to quantify impacts on a local basis, SEA does not recommend additional air quality mitigation beyond that previously imposed by the Board. As discussed above, information such as the individual plants that might use DM&E to transport PRB coal—and how much more PRB coal these plants would consume over the PRB coal they would consume anyway, using the existing service of BNSF and UP—cannot be determined in advance. SEA has nevertheless examined whether there are possible mitigation measures that could address the potential impacts on air emissions. But the Board could not

impose environmental mitigation directly on power plants in a case involving a railroad's request for authority to construct and operate a new rail line. Even if SEA could fashion a mitigation measure for DM&E that could appropriately limit the amount of PRB coal to be delivered to particular plants, SEA would not recommend such a mitigation measure, because it would ultimately be ineffective. That is because, if DM&E could only deliver a certain amount of PRB coal to a particular power plant (or plants), those plants could simply look to BNSF or UP to supply any additional PRB coal that they might want. Moreover, it has never been the Board's policy to restrict the flow of interstate commerce by limiting the amount of traffic a railroad can carry over a rail line, or deliver to any particular customer.

For all of these reasons, SEA is not recommending any additional air quality mitigation should the Board again conclude that the need for this line outweighs the potential adverse environmental impacts.